



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,708	04/27/2005	Eisuke Sasaoka	050212-0646	8757

20277 7590 01/26/2007
MCDERMOTT WILL & EMERY LLP
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER

LEPISTO, RYAN A

ART UNIT	PAPER NUMBER
----------	--------------

2883

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/532,708

Applicant(s)

SASAKA ET AL.

Examiner

Ryan Lepisto

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 1-17, 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18, 21-27 and 29-49 is/are rejected.
- 7) ☒ Claim(s) 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/27/06, 12/14/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 10/27/06 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document or that portion which caused it to be listed. It has been placed in the application file, but the reference JP 2003-255169 referred to therein has not been considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Jameson et al (US 6,301,426 B1)**.

Jameson teaches a standard single-mode silica fiber from Corning having a core surrounded by a cladding wherein attenuation is low (< 0.4 dB/km) at 1310 nm and the mode field diameter at the same wavelength is 9.3 ± 0.5 μm (column 2 lines 61-63, column 3 lines 1-7).

Jameson does not teach expressly an exact range of transmission loss of between 0.28 to 0.32 dB/km at 1310 nm.

Jameson teaches attenuation below 0.4 dB/km as previously discussed.

Art Unit: 2883

At the time the invention was made, it would be obvious to a person of ordinary skill in the art to achieve low transmission ranges. Applicant has not disclosed that an exact range of 0.28 to 0.32 dB/km provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the fiber taught by Jameson because of the low transmission taught that overlaps applicant's claimed range.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

The motivation for doing so would have been to reduce the need for amplifiers and/or repeaters along the transmission line by being able to reduce losses in the line.

Claim 21-27, 30-37, 40-43, 46 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bickham et al (US 2003/0174988 A1)** (Bickham).

Bickham teaches a silica glass optical fiber having a core (not containing germania, paragraph 0095)) and cladding have the following properties: a transmission loss at 1380 nm is preferably less than about 0.4 dB/km (paragraph 0017), a transmission loss at 1310 nm being the same as the attenuation at 1380 nm or within 0.05 dB/km the transmission loss at 1380 nm or the transmission loss at 1380 is lower than the transmission loss at 1310 nm (paragraph 0017), a mode field diameter at 1310 nm of 6.5 to 6.7 μm (Table 2), a chromatic dispersion at 1550 nm between 5 and 9 ps/nm/km (paragraph 0010), a dispersion slope at 1550 nm is less than about 0.042 ps/nm²/km (paragraph 0013), a cable cutoff of less than 1240 nm (paragraph 0014), a transmission loss at 1550 nm of less than about 0.2 dB/km (paragraph 0016), the difference between transmission loss at 1550 nm and at 1310 nm being between 0.1 to 0.4 (from the values in paragraph 0017), polarization mode dispersion at 1550 nm of less than about 0.04 ps/km^{1/2} (paragraph 0018), a core outer diameter of between 6 and 10 μm (paragraph 0024), a refractive index difference between the core and cladding of between 0.1% to 0.6% (from the values in paragraphs 0023 and 0030, which is the difference between the core and the outer cladding), loss due to OH induced water peaks at 1380 nm being virtually eliminated (paragraph 0112), a measured zero dispersion wavelength of between 1308 and 1316 nm (Table 2) and a dispersion slope at 1400 nm (which is in the preferable zero dispersion wavelength range (0010)) of 0.037 to 0.039 ps/nm²/km (Table 2).

Bickham does not teach expressly an exact range of transmission loss of between 0.28 to 0.32 dB/km at 1310 nm.

Bickham teaches attenuation in a range around 0.4 dB/km as previously discussed.

At the time the invention was made, it would be obvious to a person of ordinary skill in the art to achieve low transmission ranges. Applicant has not disclosed that an exact range of 0.28 to 0.32 dB/km provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the fiber taught by Bickham because of the low transmission taught that overlaps applicant's claimed range.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d

Art Unit: 2883

1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

The motivation for doing so would have been reduce the need for amplifiers and/or repeaters along the transmission line by being able to reduce losses in the line.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Jameson et al (US 6,301,426 B1)** (Jameson) and **Nagayama et al (US 2002/0044753 A1)** (Nagayama) with further teachings by **Chraplyvy et al (US 6,205,268 B1)** (Chraplyvy).

Jameson teaches a standard silica single-mode fiber known in the art having a mode field diameter of $9.3 \pm 0.5 \mu\text{m}$ at 1310 nm (column 2 lines 61-63).

Jameson does not teach expressly a Rayleigh scattering coefficient value.

Nagayama teaches that the Rayleigh scattering coefficient value of a standard silica fiber being about $0.85 \text{ dB/km} \cdot \mu\text{m}^4$ (paragraph 0023).

Nagayama does not teach expressly the mode field diameter of such standard fiber.

Jameson and Nagayama are analogous art because they are from the same field of endeavor, optical fibers.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that standard, known fibers in art typically have the mode field diameter and Rayleigh scattering coefficient value taught by Jameson and Nagayama and therefore would recognize that a silicon fiber with such mode field diameter would also

Art Unit: 2883

have the Rayleigh scattering coefficient in the range taught by Nagayama since this value is a basic phenomenon is proportional to 1/wavelength of the light in the fiber and cannot be eliminated (Chraplyvy, column 6 lines 61-67).

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

The motivation for doing so would have been to transmission losses in the fiber (Chraplyvy, column 6 lines 57-61; Nagayama, paragraph 0022).

Art Unit: 2883

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bickham as applied to claim 21-27, 30-37, 40-43, 46 and 49 above, and further in view of **Sasaoka et al (US 6,345,140 B1)** (Sasaoka).

Bickham teaches the fiber previously discussed.

Bickham does not teach expressly the value of the Petermann-I mode field diameter.

Sasaoka teaches that the Petermann-I mode field diameter is related to the mode field diameter by the known equations 1a and 1b (column 1 lines 52-59).

Bickham and Sasaoka are analogous art because they are from the same field of endeavor, optical fibers.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that the fiber taught by Bickham will have a Petermann-I mode field diameter less than 10 μ m using the equations provided by Sasaoka since Bickham teaches a mode field diameter at 1550 nm of 7.5 to 7.7 μ m (Table 2).

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of

Art Unit: 2883

percentage ranges is the optimum combination of percentages.”); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

The motivation for doing so would have been to have a better way to described the mode field diameter of the fiber while including the relationship of the electric field amplitude and a positional variable (Sasaoka, column 1 lines 52-65).

Claims 38-39, 44-45 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bickham as applied to claim 21-27, 30-37, 40-43, 46 and 49 above, and further in view of **Kato et al (US 6,266,467 B1)** (Kato).

Bickham teaches the fiber previously discussed.

Bickham does not teach expressly the cladding doped with fluorine.

Kato teaches a fiber having a fluorine-doped cladding (column 27 lines 4-17).

Bickham and Kato are analogous art because they are from the same field of endeavor, optical fibers.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to dope the cladding with fluorine since Bickham teaches it is known to diffuse dopants during manufacturing to round the corners of index profiles of his invention (paragraph 0127).

The motivation for doing so would have been to be able to enhance refractive index differences between layers will still allowing relatively easy manufacturing methods (Kato, column 27 lines 15-17).

Allowable Subject Matter

Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: This claim would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims because the latter, either alone or in combination, does not disclose nor render obvious an optical fiber mainly comprising silica glass having the combination of numerical property limitations giving the claims 21, 22 and 28, in combination with the rest of the claimed limitations.

Response to Arguments

Applicant's arguments with respect to the USC 102 rejections have been considered but are moot in view of the new ground(s) of rejection.

In response to the argument that the specific ranges of claim 18 are not taught by the reference and there is lack of motivation to combine the references and therefore obviousness has not been proven: First, in response to applicant's argument

Art Unit: 2883

that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation for doing so would have been to transmission losses in the fiber (Chraplyvy, column 6 lines 57-61; Nagayama, paragraph 0022).

Second, in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In *re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In *re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In *re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In *re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In *re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In *re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

In response to the argument that there is no motivation to combine the Bickham and Sasaoka references: In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation for doing so would have been to have a better way to describe the mode field diameter of the fiber while including the relationship of the electric field amplitude and a positional variable (Sasaoka, column 1 lines 52-65).

In response to the argument that there is no motivation to combine the Bickham and Kato references: In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation for doing so would have been to be able to enhance refractive index differences between layers while still allowing relatively easy manufacturing methods (Kato, column 27 lines 15-17).

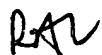
Art Unit: 2883

Contact Information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-Th 7:30 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ryan Lepisto
Art Unit 2883



Frank Font
Supervisory Patent Examiner
Technology Center 2800